REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated March 1, 2006. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due consideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-9 and 13 are under consideration in this application. Claims 1, 5, 9 and 13 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicant's invention.

All the amendments to the claims, the specification, and the drawings are supported by the specification. Applicant hereby submits that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

Claims 1-9 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 6,885,677 to Klevans (hereinafter "Klevans") in view of the article entitled "MPLS (Multiprotocol label Switching)" August 11, 2003 by Sheldon (hereinafter "Sheldon"). This rejection has been carefully considered, but is most respectfully traversed.

In a storage system (for example, the embodiment depicted in Fig. 6B) having a plurality of interface ports 108 and a plurality of logical devices 102, wherein the interface ports 108 are connected to a multiple protocol label switching (MPLS) network 103 and the interface ports 108 are formed to conduct MPLS protocol, the method of establishing a path between a logical device 102 and a client connected to a MPLS network 103 of the invention, as recited in claim 1, comprises: selecting an interface port 108 having a requested bandwidth by a client from among the plurality of interface ports ("*the storage-network port is at least 1 Gb/sec capable*" [0091]); mounting to the selected interface port 108 a logical device 102 capable of handling the MPLS network ([0091]) and designated for the client ("*The storage service management device determines a logical storage device that is used for input/output by clients, at Step 707. Subsequently, at steps 708 and 709, the storage service management element sends a request to mount the logical device into the network interface selected at Step 707*" [0107]; box 709 in Fig. 7B); establishing a label switching path LSP from the selected interface port 108 over the MPLS network 103 to the client, said label switching

path LSP having the requested bandwidth; setting a service priority of the selected interface port 108 to the client in response to the requested bandwidth; operatively connecting the selected interface port 108 and the client to said label switching path LSP; transmitting data through said label switching path LSP while masking data transmitted therethrough from unauthorized access by at least one of: (i) a host software, (ii) host bus adapter utilities, (iii) switch zoning, and (iv) mapping within a storage controller ("*there are four approaches to providing LUN security: (i) host software, (ii) host bus adapter utilities, (iii) switch zoning, and (iv) mapping within a storage controller .... hereby incorporated herein by reference. The storage path management program allows volumes of data transmitted through the MPLS network to be masked from unauthorized access*" [0048]); releasing said label switching path LSP and said logical device 102 from the selected interface port 108 after transmitting said data (boxes 213 in Fig. 2; "*Label distribution method 200 consists of three main sequences: sequence A, including steps 201 to 204, that establishes a label switching table; sequence B, including steps 205 to 210, that transfers the data from the storage device to the client; and sequence C, including steps 211 to 213, that releases the label switching table.*" [0056]; "*The storage service management device 101 sends a LSP release request at Step 211 to be transmitted subsequently through the storage device to the LSRn. .... As a result, the label switch table is released by the network*" [0061]; "*After the LSP has been released, this table field is cleared.*" [0088];"*Element 101 also performs Step 211 when sending a LSP release request to the storage device 102*" [0063]); and separately managing data transmission performance inside the storage system from data transmission performance of the MPLS network ("*the performance of the storage ports of storage device 102 is managed through a storage path management element 102.2, and separately from the performance of network paths. As a result, the capability for the system described above to match the performance of the network path with the one of the network ports is provided*" [0085]).

The invention as recited in claim 5, is directed to the method recited in claim 1, but further comprising a step of: requesting a management server connected to the MPLS network to establish a label switching path between the selected interface port and a client having a requested bandwidth.

The invention as recited in claim 9, is directed to a storage system, comprising: a plurality of interface ports coupled to a multiple protocol label switching (MPLS) network, each of the interface ports being formed to establish a label switching path (LSP) to a client coupled to the MPLS network; and a plurality of logical devices formed to be operatively

attachable to at least one of the plurality of interface ports. Each of said plurality of interface ports includes a means for establishing a label switching path in response to a client having a requested bandwidth, means for setting a priority of service to the client with which the label switching path is established in response to the requested bandwidth.

The invention as recited in claim 13, is directed to a storage system comprising the interface ports and the logical devices formed of claim 9, and a management server operatively connected to the MPLS network, the management server including a means for establishing a label switching path between at least one of the plurality of interface ports and a client coupled to the MPLS network. The client has a requested bandwidth, and said management server further includes means for setting a priority of service to the client with which the label switching path is established in response to the requested bandwidth.

Applicant respectfully contends that the cited references do not teach or suggest any of the four steps: "(1) mounting to the selected interface port 108 a logical device 102 capable of handling the MPLS network and designated for the client; (2) transmitting data through said label switching path LSP while masking data transmitted therethrough from unauthorized access by at least one of: (i) a host software, (ii) host bus adapter utilities, (iii) switch zoning, and (iv) mapping within a storage controller; (3) releasing said label switching path LSP and said logical device 102 from the selected interface port 108 after transmitting said data; and (4) separately managing data transmission performance inside the storage system from data transmission performance of the MPLS network" as the present invention.

Regarding the (1) & (3) features, the invention mounts to the selected interface port 108 a logical device 102 capable of handling the MPLS network and designated for the client, and operatively connects the selected interface port 108 and the client to said label switching path LSP. After the transmitting data, the invention releases the LSP and said logical device 102 from the selected interface port 108. In prior art, the mapping information between I/O ports and volumes/logical devices is fixed (i.e., no "releasing") under a normal operation after mounting thereon.

Regarding the (2) feature, the present invention assures both MPLS network quality and "MPLS network security" improvements between a network client/ "client group" and "logical devices" in the storage system ([0039]). Therefore, the storage path management program resided in the storage system allows volumes of data transmitted through the MPLS network to be masked from unauthorized access. Klevans and Sheldon are silent regarding "MPLS network security."

Regarding the (4) feature, this storage path management program of the invention manages performance inside the storage system separately from performance of MPLS network paths, to ensure the capability of the storage system port match/support the performance of the network path ([0085]). In contrast, Klevans and Sheldon only disclose general technology controlling the performance of the MPLS network paths, but nothing about the capability of the storage system port.

The cited prior art references and their combinations fail to teach or suggest each and every feature of the present invention as recited in at least the independent claims 1, 5, 9 and 13. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Conclusion

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicant respectfully contends that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and telephone number indicated below.

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